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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GEORGE A. BROCK-FISHER, JANICE L. FRISA, and
MCKEE D. POLAND

Appeal 2010-006424
Application 11/091,635
Technology Center 3700

Before LINDA E. HORNER, BRETT C. MARTIN, and
SCOTT A. DANIELS, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

George A. Brock-Fisher et al. (Appellants) seek our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1-12, 14-20, and 22-44. Claims 13 and 21 are pending but not rejected.¹ We have jurisdiction under 35 U.S.C. § 6(b).

¹ Although Appellants identify claims 1-44 as being “finally rejected” and “the subject of the present Appeal” (Br. 3), neither the final Office Action

We REVERSE and enter a NEW GROUND OF REJECTION pursuant to our authority under 37 C.F.R. § 41.50(b).

THE INVENTION

Appellants' claimed invention relates to "ultrasonic diagnostic imaging systems and methods for measuring perfusion using contrast enhancing agents, preferably with 3D scanning." Spec. 1, ll. 6-7. Claims 1 and 22, reproduced below, are illustrative of the subject matter on appeal.

1. A method of perfusion analysis using ultrasound contrast agents, comprising the steps of:

introducing a contrast agent into the bloodstream of a patient under examination in order to perfuse a volume of interest;

identifying the volume of interest and a destruction volume, proximate the volume of interest, which supplies blood to the volume of interest, by scanning the volume of interest and the destruction volume using low mechanical index (MI) ultrasound;

destroying at least the contrast agent in blood present within the destruction volume using high MI ultrasound in order to destroy the contrast agent within the blood present in the destruction volume such that said present blood is contrast-agent-depleted; and

imaging the volume of interest using low MI ultrasound substantially simultaneously as the contrast-agent-depleted blood from the destruction volume perfuses the volume of interest, causing an exchange within the volume of interest of contrast-agent-laden blood with contrast-agent-depleted blood, indicating perfusion in the volume of interest.

from which this appeal was taken nor the Answer contains a rejection of claims 13 and 21.

22. An ultrasound imaging system for conducting perfusion analysis of myocardial tissue volumes utilizing an ultrasound contrast agent, the system comprising:

an ultrasound transducer for transmitting low-mechanical index (MI) ultrasound into a region of a patient's heart, and receiving ultrasound echoes of the pulses, to highlight a presence of blood infused with the contrast agent in the region;

a selector within a user interface to the ultrasound system for receiving an imaging volume and a destruction volume defined within the region by a user, wherein the destruction volume is a volume in the region proximate the imaging volume through which contrast-agent-laden blood perfuses the imaging volume; and

a controller for controlling the transducer to automatically scan the destruction volume with high MI ultrasound to destroy contrast agent in blood present in the destruction volume, and to automatically scan the imaging volume with low MI ultrasound;

wherein said automatic scan of said imaging volume is conducted substantially immediately at completion of said automatic scanning of the destruction volume to detect a perfusion of non-contrast-agent-laden blood into the imaging volume.

THE EVIDENCE

The Examiner relies upon the following evidence:

Cerofolini	US 2002/0016546 A1	Feb. 7, 2002
Miller	US 6,497,667 B1	Dec. 24, 2002
Peterson	US 6,390, 980 B1	May 21, 2002
Schutt	US 2002/0065467 A1	May 30, 2002
Salgo	US 2003/0060710 A1	Mar. 27, 2003

THE REJECTIONS

Appellants seek review of the following rejections:

1. Claims 22-39 and 42 are rejected under 35 U.S.C. § 102(b) as being anticipated by Cerofolini.
2. Claims 1-6, 10-12, and 14-18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Schutt.
3. Claims 7-9, 19, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Schutt and Salgo.
4. Claims 40 and 41 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Schutt and Peterson.
5. Claims 43 and 44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cerofolini and Miller.

ISSUES

Appellants argue that Cerofolini does not anticipate the system of independent claims 22 and 26 because it does not disclose a controller configured to perform the functions called for in these claims. Br. 9-11. The Examiner found that Cerofolini discloses “a controller for controlling the transducer” and capable of automatically scanning the destruction volume with high MI ultrasound to destroy contrast agent in blood present therein, and automatically scanning the imaging volume with low MI ultrasound. Ans. 4-5. *See also* Ans. 10 (characterizing the functions recited in the claims as being “directed to intended use of the device”).

Appellants argue that Schutt does not render obvious the subject matter of method claims 1 and 15 because Schutt “does not teach or suggest

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identifying any volume other than a ‘target region’” and because Schutt destroys contrast agent in the target region, “there is no reason for SCHUTT to identify a separate ‘secondary volume.’” Br. 14. The Examiner acknowledged that Schutt teaches “destroying the contrast agent in the region of interest,” but the Examiner concluded that “one could just as easily have destroyed the contrast agent in the secondary volume, studied the rate of flow of contrast agent-depleted blood into the region of interest and still obtained the same result.” Ans. 6. The Examiner further explained that “[i]n establishing a volume of interest, one automatically establishes and identifies at least one ‘secondary region’ adjacent to the ‘volume of interest’ since the established boundary to the ‘volume of interest’ would also form the boundary of a second volume not of interest.” Ans. 10.

The issues presented by this appeal are:

Does the recitation of “a controller for controlling the transducer” to perform certain recited functions patentably distinguish the claimed system from the system of Cerofolini, which includes a controller that is merely capable of being programmed to perform the recited functions?

Did the Examiner articulate adequate reasoning based on rational underpinnings to explain why the claimed method would have been obvious to one of ordinary skill in the art in light of the teachings of Schutt?

ANALYSIS

Rejections based on Cerofolini

The Examiner contends that the functional language in the recitation of the controller in claims 22 and 26 is merely intended use, and is not a

structural limitation of the controller. Ans. 10. The Examiner's position that claims 22 and 26 recite only a general purpose controller as the claimed controller for controlling the transducer is untenable. It is well established that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, *see, e.g., In re Schreiber*, 128 F.3d 1473, 1477-78 (Fed. Cir. 1997). In order to satisfy the functional limitations in an apparatus claim, however, the prior art apparatus must be capable of performing the claimed function. *Id.* at 1478. To be capable of performing the functional limitations in claims 22 and 26, the controller in Cerofolini must possess the necessary structure, that is, programming, to function as claimed. We agree with Appellants that Cerofolini does not disclose that its controller is programmed to, for example, control the transducer to automatically scan a destruction volume with high MI ultrasound to destroy contrast agent in blood present in the destruction volume, and to automatically scan the imaging volume with low MI ultrasound for detecting a perfusion of non-contrast-agent laden blood into the imaging volume defined by the user. As such, Cerofolini does not anticipate independent claims 22 and 26 or their dependent claims 23-25, 27-39, and 42. The Examiner's rejection of claims 43 and 44 under 35 U.S.C. § 103(a) over Cerofolini and Miller fails for the same reason.

Rejections based on Schutt

We agree with Appellants that Schutt does not disclose identifying a destruction volume that is proximate a volume of interest. Br. 14. Rather, in Schutt the destruction volume and the target volume are the same. Schutt,

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para. [0022]. We disagree with the Examiner's reasoning that establishing a volume of interest automatically establishes the boundary of a second volume not of interest. Ans. 10. Establishing a volume of interest does not automatically establish a boundary of a second volume. As such, the Examiner has failed to articulate adequate reasoning based on rational underpinnings to support the conclusion of obviousness of method claims 1-6, 10-12, and 14-18 based on Schutt. The rejections of claims 7-9, 19, and 20 based on Schutt and Salgo and of claims 40 and 41 based on Schutt and Peterson fail for the same reason.

NEW GROUND OF REJECTION

We reject claim 14 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

Claim 14 recites, "A computer readable medium within which is encoded a set of computer instructions, which set provides for the implementation of the method as set forth in claim 1." By the terms of Appellants' Specification, Appellants defined that "computer readable medium" includes "any means that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device" including "paper" and "electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium." Spec. 13, ll. 14-27. As such, Appellants expressly define the scope and meaning of the term "computer readable medium" so as not to be limited to statutory articles of manufacture (e.g., various types of computer memories and disks). Rather,

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Appellants expressly define a “computer readable medium” as including paper onto which software instructions are printed.

The Board of Patent Appeals and Interferences has previously held that a printing on a piece of paper constitutes non-statutory subject matter. *See, e.g., Ex parte Shealy*, No. 2006-1601, available at <http://www.uspto.gov/ip/boards/bpai/decisions/inform/fd061601.pdf>, at 36 (BPAI Apr. 23, 2007) (informative) (An expanded panel of this tribunal sustained the Examiner’s rejection of the claims under 35 U.S.C. § 101 as being directed to non-statutory subject matter because the Specification expressly stated that “the computer-readable medium could even be paper.”).

Appellants also state that the computer readable-medium could constitute an “electronic, magnetic, optical, electromagnetic, [or] infrared. . . propagation medium.” Spec. 13, ll. 16-18. This definition encompasses transitory, propagating signals. “A transitory, propagating signal . . . is not a ‘process, machine, manufacture, or composition of matter.’ Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter.” *In re Nuijten*, 500 F.3d 1346, 1357 (Fed. Cir. 2007).

We therefore, reject claim 14 under 35 U.S.C. § 101 for being directed to non-statutory subject matter.

CONCLUSIONS

The recitation of “a controller for controlling the transducer” to perform certain recited functions patentably distinguishes the claimed

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system from the system of Cerofolini, which includes a controller that is merely capable of being programmed to perform the recited functions.

The Examiner did not articulate adequate reasoning based on rational underpinnings to explain why the claimed method would have been obvious to one of ordinary skill in the art in light of the teachings of Schutt.

DECISION

We REVERSE the decision of the Examiner to reject claims 22-39 and 42 under 35 U.S.C. § 102(b) and claims 1-12, 14-20, 40, 41, 43, and 44 under 35 U.S.C. § 103(a).

We enter a NEW GROUND OF REJECTION of claim 14 under 35 U.S.C. § 101 for being directed to non-statutory subject matter. 37 C.F.R. § 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

37 C.F.R. § 41.50(b) also provides:

[T]he [A]ppellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the Examiner, in which event the proceeding will be remanded to the Examiner. . . .

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

REVERSED; 37 C.F.R. § 41.50(b)

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